Huntleigh
HEALTHCARE

AC550 Flowtron® Excel system
Service Manual

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Preface

Read and understand this manual before attempting to service or repair the equipment.

This manual is intended to be used only by qualified Huntleigh Healthcare service technicians. In the event that the manual is provided to a customer in response to customer requirements, the customer is advised not to attempt repairs and to direct any required service to qualified Huntleigh Healthcare service technicians. In no event will Huntleigh Healthcare be responsible for any service performed by customers or third parties.

Warnings, Cautions and Notes

WARNINGS given in this manual identify possible hazards in procedures or conditions which, if not correctly followed, could result in death, injury or other serious adverse reactions.

Cautions given in this manual identify possible hazards in procedures or conditions which, if not correctly followed, could result in equipment failure or damage.

Notes given in this manual are used to explain or amplify a procedure or condition.

General Warnings

WARNING

Before performing any service or maintenance procedures, ensure that the equipment has been adequately decontaminated.

Voltages in excess of 30 volts RMS or 50 volts DC can, in certain circumstances, be lethal. When working on equipment requiring exposure to live, unprotected conductors where such voltages are present, extreme care must be exercised.

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1 INTRODUCTION

1.1 About This Manual

This manual contains information on servicing the AC550 **Flowtron® Excel** system which consists of the pump and a pair of garments. The manual is sectioned with tabbed dividers for ease of use and consists of the following sections.

Section 1 - **Introduction**: contains a general description of the overall operation of the system and a technical description of the construction of the pump and principles of operation.

Section 2 - **Operational Maintenance**: describes both functional and static checks to ensure correct operation during the service life of the system.

Section 3 - **Troubleshooting**: contains tables of fault symptoms, possible causes, and suggested steps to correct the problem.

Section 4 - **Preventive Maintenance**: contains a list of parts which are replaced periodically to ensure the correct operation of the system.

Section 5 - **Servicing The Pump**: contains illustrated procedures for replacing pump components.

Section 6 - **Technical Data**: contains a list of technical data.

Section 7 - **Spare Parts**: contains a list of spare parts that should be kept in stock.

1.2 General Description

The **Flowtron Excel** system is a specially designed non-invasive system for the prevention of deep vein thrombosis (DVT). The application of external pneumatic compression has two effects :

1. Augments venous blood flow velocity, thereby reducing stasis, and
2. Enhances fibrinolytic activity to reduce the risk of early clot formation.

The **Flowtron Excel** system is comprised of a pressure regulated pump unit and a pair of calf or thigh length, single patient use garments. The pump provides intermittent cycles of compressed air which alternately inflate the single-chambered garments. The compression applied on the extremity augments venous blood flow velocity and stimulates fibrinolysis.

The pump operates on a 60-second, automatically timed cycle consisting of approximately 12 seconds of compression followed by approximately 48 seconds of deflation. The recommended operating pressure is 40 mmHg, unless otherwise prescribed by a physician.

The pump unit is a piece of precision equipment, and providing it is handled and properly serviced (normally every 12 months), should give long and trouble-free service.

Controls of the pump unit consist of :

- Electric power switch (green rocker switch) illuminated when in ‘ON’ position, as is the green LED on the top panel.
- Pressure control knob. Pressure adjustment range is between 30 mmHg and 60 mmHg.
- Single Leg button with amber LED, when selected allows for single garment use without the alarm being falsely activated.
- Illuminated display that indicates system pressure and also fault messages.

The **Flowtron Excel** pump unit has both audible and visual alarms. When a fault condition occurs, the red LED flashes and the description "HI, Lo or F" is indicated on the display panel on the pump. If the fault condition is unaltered, the audible alarm will increase in pitch until the fault is corrected and the system is reset.

1.3 Technical Description

The pump is an electromechanical unit designed to supply compressed air to the garments while controlling the inflation time and pressure.

In addition, an electronic module monitors pressure and fault conditions only. It is independent of the control system, and functions independent of thepump pressure.

Referring to the schematic diagram (Figure 1.1), the key parts of the pump are as follows.

1. Compressor

This provides a constant flow of air to the pneumatic system, thus allowing inflation of the garments.

2. Rotary Valve

This controls the delivery of pressure to the garments and sets the duration and frequency of the garment inflation.

3. Pressure Control Valve

This sets the maximum pressure that can be delivered to the garments.

4. Differential Pressure Transducer

This measures the pressures at each garment part and provides the monitoring system with the means of accurately measuring relative pressures in the two garments.

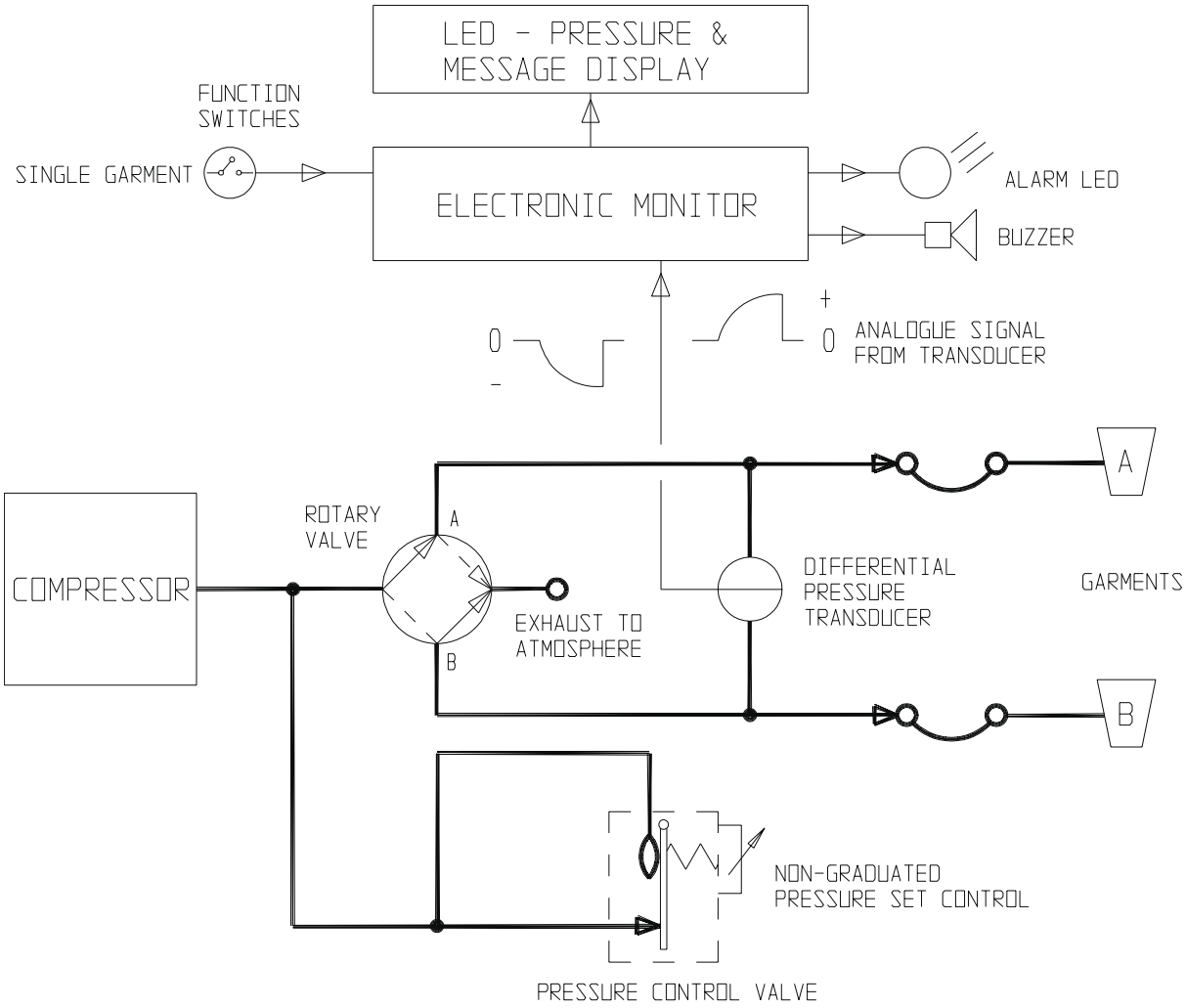
5. Electronic Monitor

The electronics in the monitoring system perform continuous checking of the operation and performance of the pneumatic circuit. In the event of a detected fault, the electronic monitoring system generates both audible and visual alarms.

6. LED-Pressure and Message Display

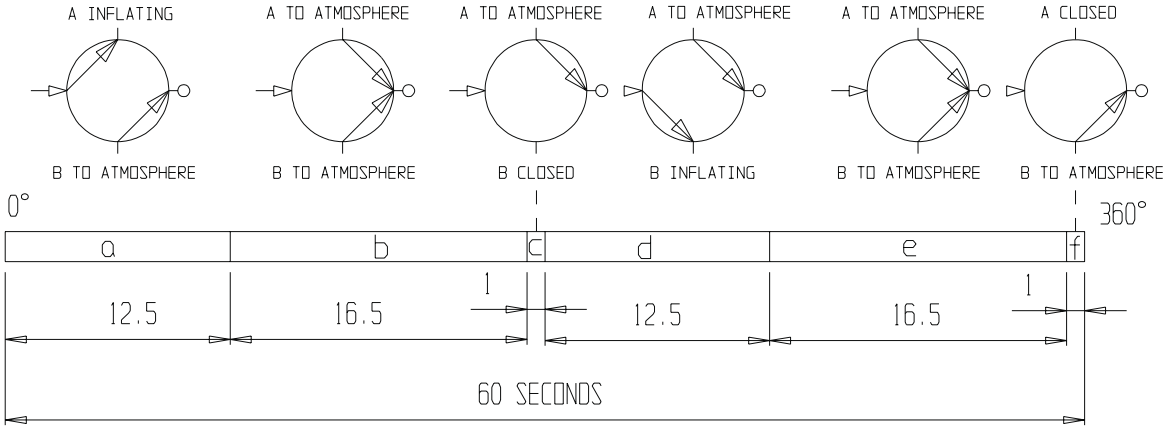
The monitored pressure is displayed on the dual, seven segment display in real time. In the event of a detected fault, the relevant fault message is displayed.

1.4 Pneumatic Schematic

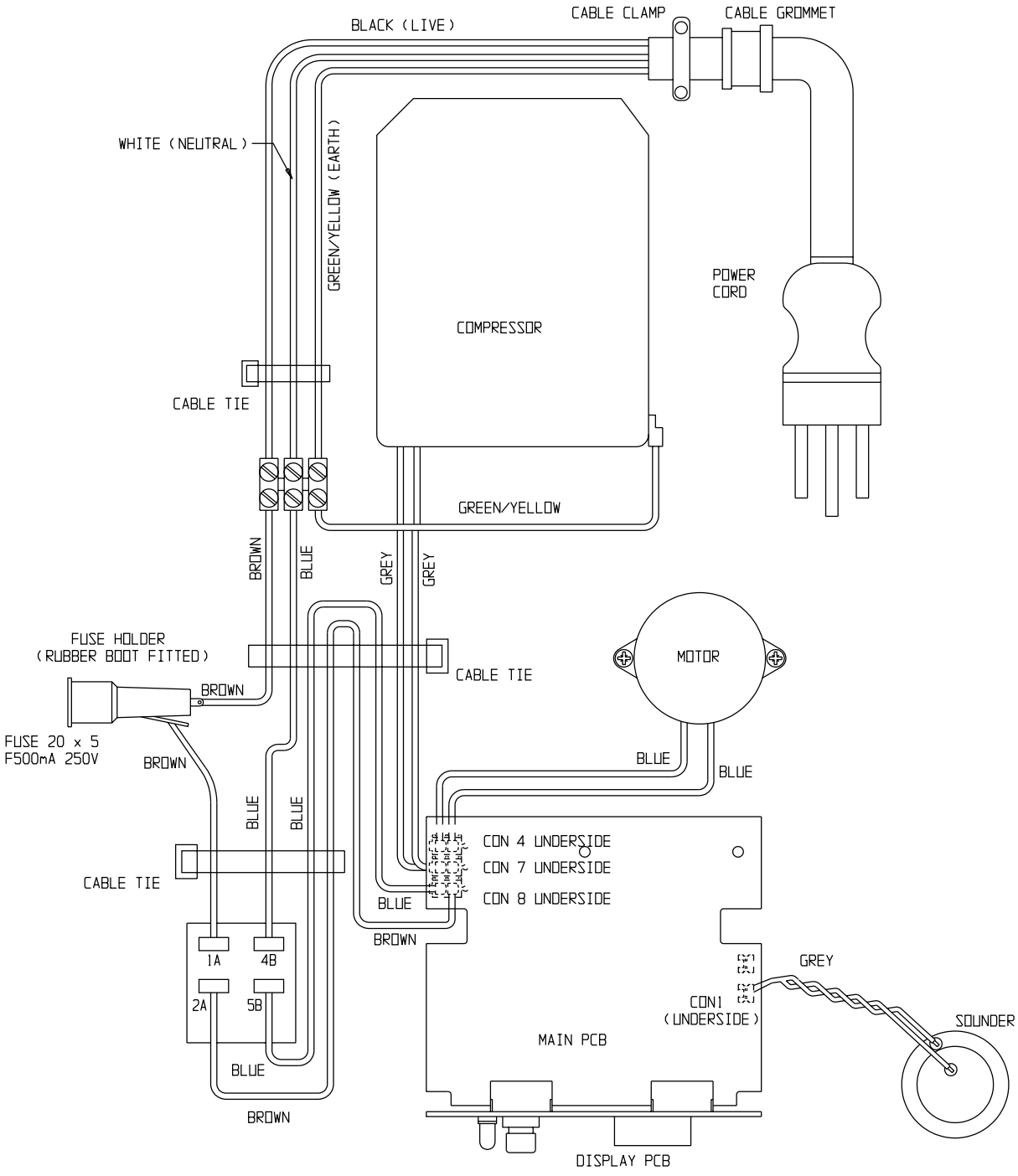


1.5 Valve Sequence

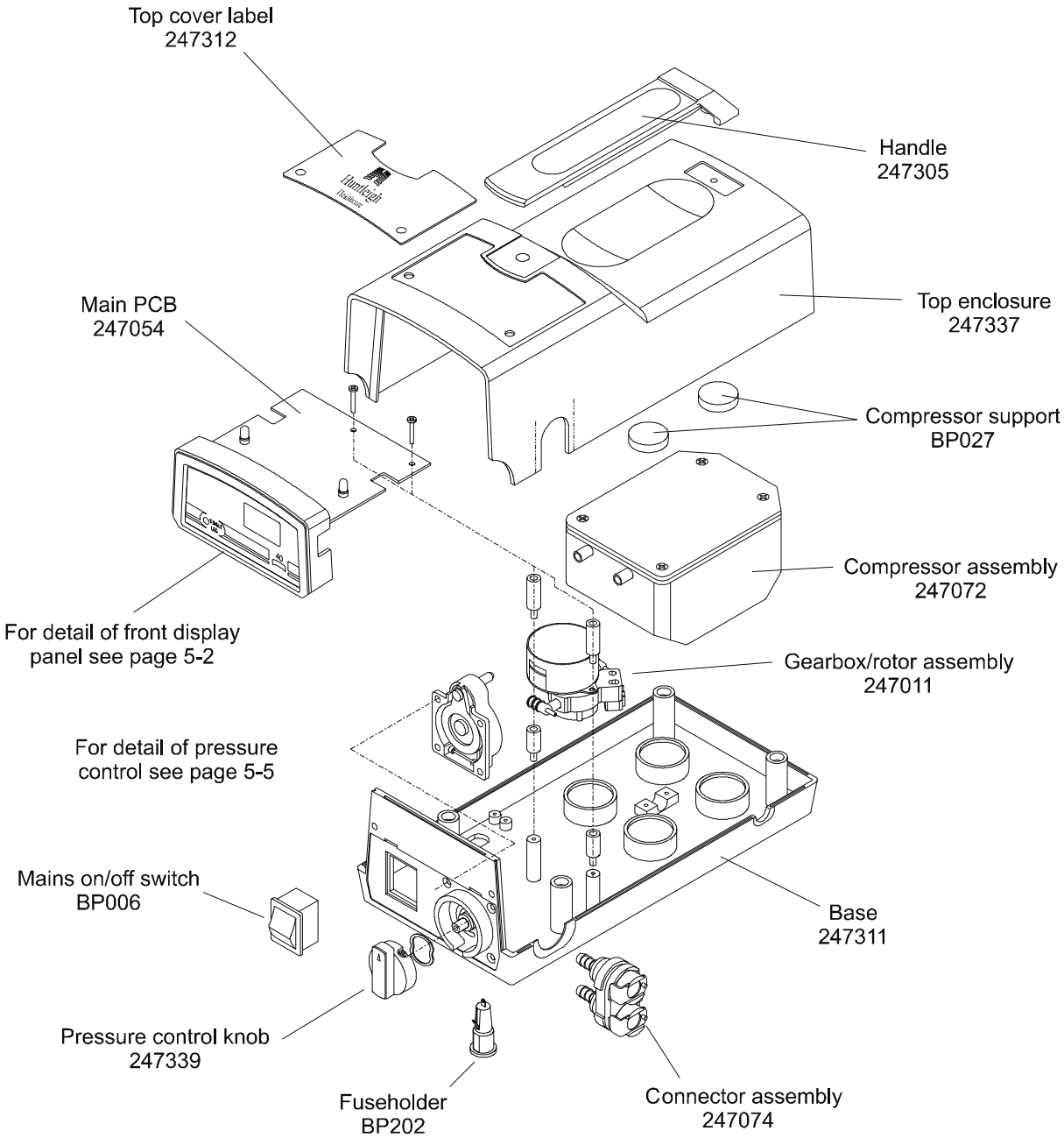
VALVE SEQUENCE



1.6 Electrical Wiring Schematic



1.7 General Assembly

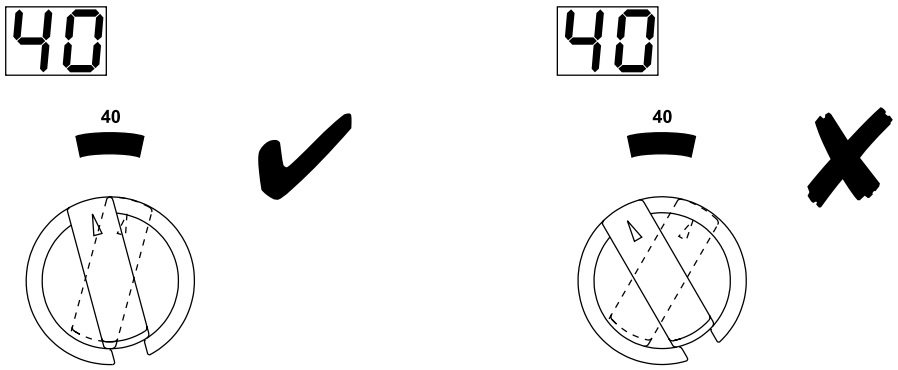


2 OPERATIONAL MAINTENANCE

2.1 Routine Checks

These procedures should be carried out each time the system is used.

1. Inspect the pump unit for external damage to case, controls, and connections.
2. Inspect power cord for damage or twisting, and replace if necessary.
3. Check that the control knob is set to the recommended setting of 40 mmHg.
4. Check the calibration of the control knob and pressure display. In normal operation, when the display reads 40, the knob pointer should be somewhere within the 40 arc. If not, the pump should be returned to Service for recalibration.



5. Check the hanging hook is secure.
6. Check the feet are in place.

3 TROUBLESHOOTING

The **Flowtron**® **Excel** pump unit has both an audible and a visual alarm. If a problem occurs, the system will sense the fault and briefly flash a message on the display. It will not alarm immediately in order to screen out false alarms due to normal patient movement. If the same fault continues on ten successive inflations, the audible alarm will sound and a flashing message will remain on the display until corrective action is detected.

Note: The exception is the "F" system alarm which will be activated on sensing the fault on the first occasion.

3.1 Preliminary Checks

HI or **Lo** faults have probably been caused by garment or tubing problems. Garment faults should be checked as below.

Display	Problem	Corrective Action
Lo	1. Loose fitting garment. 2. Hose disconnected at garment. 3. Garment leak. 4. Low pressure.	1. Rewrap snugly. 2. Check the hose connection at garment end. 3. Check garment and replace if faulty. 4. Refer to service.
HI	1. Hose kinked causing a blocked tube. 2. Hose disconnected at pump. 3. Single garment attached without pressing "Single Leg" button.	1. Check hoses for kinks or obstructions. 2. Check the hose connection at pump outlet. 3. Press "Single Leg" button if only one garment is used.
F	Pump failure.	**DO NOT USE PUMP**. Refer to service.

In the unlikely event of a monitoring system electronics failure, the red LED on the top panel will flash rapidly to indicate monitoring system failure.

If garment faults have been eliminated and the fault persists, proceed to Service Mode Checks.

3.2 Service Mode Checks

Service mode gives additional information on the type of alarm fault.

To access the service mode, hold the Single Leg

button down for approximately 13 seconds. The unit will then 'beep' and the red LED on the top panel will be constantly displayed.

The main display will now indicate the actual pressure to 1 mmHg resolution and also display the detailed fault codes.

Fault codes and counter measures are described in the following table (see pages 3-3 and 3-4).

3.3 Loss of Electrical Power

Power loss can be due to the following :

1. No electricity supply at wall outlet.
2. Faulty wall outlet.
3. Damaged cord or cord plug.
4. Defective fuse link.
5. Damaged internal wiring.
6. Cord plug inadvertently removed from wall outlet.

3.4

3.0.0.1 Fault Codes and Counter Measures

	MESSAGE User Mode	Service Mode	Fault Detection Protocol	Possible Causes User Faults	Possible Causes Pump Faults	Effect	Reset Method	
	Lo	**L4**	A single event where no pressure greater than 4mmHg, is detected for 135 secs., which then activates the alarm. During this period, a **Lo** message briefly appears on the display, at 30 sec. intervals, but not necessarily in synchronisation with the air output.	Both supply tubes disconnected at the garment connectors.	Rotary valve failed in the closed position Compressor failure. Pressure control valve fault.	No inflation of both garments.	1 normal cycle, or power reset.	
	F	**F3**	Pressure greater than 72mmHg detected for 6 secs., which then activates the alarm.	N/A	Pressure control can be set too high, due to incorrect adjustment. Monitoring PCB system, pressure display/calibration fault.	Garment pressure is higher than the therapeutic recommendations	Power reset only.	
	F	**F4**	Pressure greater than 15mmHg detected for 40 secs., which then activates the alarm. Note : Constant high priority alarm note.	N/A	Valve failed in the fully open position.	Constant inflation of the garment, giving a tourniquet effect.	Power reset only.	

MESSAGE User Mode	Service Mode	Fault Detection Protocol	Possible Causes User Faults	Possible Causes Pump Faults	Effect	Reset Method
HI	**HI**	A high speed inflation event of less than 0.5 sec. duration from 5mmHg to >24mmHg is detected in the pump transducer. If 10 similar events are detected in succession on the same output, the pump will alarm. As each event is detected, a **HI** message briefly appears on the display, (but alarm is not activated).	A kinked supply tube. The supply tube disconnected at the pump outlet Single garment in use, without single leg button being activated.	Kinked tube - rotary valve to outlet connector.	No inflation of the garment	1 normal cycle, or power reset
Lo	**L1**	A low pressure event comprising of no pressure greater than 27mmHg over a 9-second period, from an initial inflation point of 5 mmHg. If 10 similar events are detected in succession on the same output, the pump will alarm. As each event is detected, a **Lo** message briefly appears on the display, (but alarm is not activated).	a) A large leak in the garment, hose. OR b) The supply tube disconnected at the garment connector. OR c) Loose fitting thigh length garment	Kinked tube to pressure transducer OR Rotary valve leak OR Leaking tube - rotary valve to outlet connector OR Low output compressor.	No inflation of the garment OR The garment may not be at the therapeutic pressure for the required time	1 normal cycle, or power reset.
Lo	**L3**	A slow inflation event comprising of a pressure rise no greater than 24mmHg in a 9 sec. period, from an initial inflation point of 5mmHg. If 10 similar events are detected in succession on the same output, the pump will alarm. As each event is detected, a **Lo** message briefly appears on the display, (but alarm is not activated).				1 normal cycle, or power reset.

4 PREVENTIVE MAINTENANCE

Preventive maintenance should be carried out every 12 months.

WARNING

Before dismantling the pump unit, ensure unit has been isolated from the power supply by removing the cord plug from the wall outlet.

CAUTION : Static Sensitive Devices

This pump should only be opened by personnel trained in ESD methods and with appropriate equipment and anti-static protection.

4.1 Servicing Protocol

WARNING :

A potential ELECTRICAL SHOCK HAZARD exists when the top cover is removed, EVEN with the pump switched off.

4.1.1 Procedure to Remove Top Cover

1. Ensure pump is switched Off and the power cord is removed from the supply outlet.
2. Turn pump over and remove the four mounting feet using a flat blade screwdriver.
3. Remove the four screws from the base using a suitable screwdriver.
4. Turn the pump over as one whole unit and then carefully remove the top cover.

4.1.2 General Service - Pump

Initial Assessment (Visual)

Check:

a) Enclosure condition

b) Fittings for damage and security

c) Labelling is secure and legible

Open pump and check:

d) Wiring security and terminations are secure

e) Tubing security and integrity

f) Component fastenings are secure

g) General condition inside is clean

Open compressor and check:

h) Bellows assembly condition

i) Silencer bag weld seams

General:

j) Check power cord assembly for security

k) Clean condition of pump

If any items in a) - j) appear defective, replace using an appropriate spare part and record action on the service record sheet.

Re-assemble pump unit completely, run for a minimum of 1 hour and check calibration. Adjust if required.

Note: It is important to ensure all tools used for servicing are kept in good condition, and test rigs for measuring flow and pressure are regularly calibrated to a reference master gauge calibrated to a National Standard.

4.2 Pressure Output and Calibration Checks

A calibrated Manometer/Pressure Meter with better than 0.5 mmHg accuracy.

In normal operation, when the display reads 40, the knob points should be somewhere within the marked 40 mmHg arc. If not, the pump should be returned for re-calibration. The error could be due to :

a) Inaccuracy of the pressure setting control - see Section 4.3 Pressure Control Calibration.

b) Inaccuracy of the pressure display - see Section 4.4 Pressure Display Calibration.

Use the following procedure to check the pump:

1. Hold the Single Leg button down until display changes to Service Mode resolution (see Section 3.2).
2. Set control knob to 12 o'clock position. Ensure garments are connected to both outputs.
3. Connect a calibrated Manometer to one of the output ports. The manometer reading should be within ± 2 mmHg of the display reading. If not, follow the Pressure Display Calibration procedure as in Section 4.4.
4. At 12 o'clock the displayed pressure should be 40 mmHg ± 2mm - if not, follow the Pressure Control Calibration procedure as in Section 4.3.
5. Check the other output port to the same specification.
6. Check the air flow of each output.

Flow specification	With control knob set to 40 MmmHg Minimum Flow 6.0 liter per minute free flow
	With control knob set to Maximum (+) Minimum flow 3.5 liter per minute

7. Switch the pump off, then on again, to revert to the normal resolution mode.
8. Check that the display reads 40 on each output port when the pressure control knob pointer is located within the 40 mmHg arc.
9. Check the Minimum and Maximum range settings.
   Minimum setting is equal to or greater than 25 mmHg.
   Maximum setting is equal to or less than 70 mmHg.

4.3 Pressure Control Calibration

1. Select the Service Mode as detailed in Section 3.2.
2. Set the control knob to 12 o'clock.
3. With a cross-head screwdriver rotate the control knob adjusting the screw until the display reads 40 mmHg +3/-0 mmHg on both outputs.
4.

4.4 Pressure Display Calibration

The **Flowtron® Excel** utilizes a precise and accurate pressure management system which is not expected to require re-calibration until after several years of continuous use. The measurement system automatically handles any adverse effects due to drift or temperature change and should not require any user intervention. However, the pressure display should be verified for accuracy at each service interval.

4.4.1 Calibration Check

Equipment required:

A calibrated Manometer/Pressure Meter with range of 100 mmHg and accuracy of better than 0.5 mmHg.

Ensure that the pressure control knob is set to the midpoint of the 40 mmHg marked area (12 o'clock position).

Switch the pump on without any tubes or garments connected. Attach an external manometer to either of the garment ports.

Select service mode as detailed in Section 3.2.

This pressure reading will cycle in the same manner as therapy would normally occur. Thus the display should show a constantly low reading (i.e., <3 mmHg for approximately an 18 second period, followed by a higher set therapy pressure reading of 37-43 mmHg for a 12 second period). This cycle will repeat itself every 30 seconds on alternate ports. If the system calibration is correct, the displayed pressure accuracy should be within ± 3 mmHg of the reference external manometer/meter reading on both ports.

4.4.2 Pressure Display Re-calibration Procedure

Equipment required:

- Calibrated source of regulated non-pulsatile air at pressure of 70 mmHg ± 0.5 mmHg
- Calibrated Manometer / Pressure meter with range of 100 mmHg and accuracy of better than 0.5 mmHg
- Trimming tool / small screwdriver

If at any time during the calibration process the pump displays 'CF' and beeps continuously, this indicates a Calibration Fault and the procedure should be restarted.

WARNING :

DURING CALIBRATION AC POWER VOLTAGES ARE PRESENT

1. With the pump switched Off and disconnected from the power supply, remove the top cover as detailed in Section 4.1.1
2. Carefully disconnect the two tubes attached to the pressure transducer and attach a suitable piece of spare tubing to one of the ports of the transducer, leaving both the other end of the tube and the other transducer port disconnected.
3. Attach a shorting link across connector CON 3.
4. Reconnect the plug into the supply outlet and switch the pump on. The pump should beep and, following its initial test sequence, will display ‘CO‘ and beep continuously.
5. Remove the shorting link from connector CON 3.
6. Press the Single Leg button, ensuring that the unit beeps and the display changes to ‘AO’. Wait for approximately 5 seconds. If the display has changed to ‘C7‘, proceed to the next step. If, however, after the 5 second period the display still shows ‘AO’, a small adjustment to the ZERO trimmer potentiometer is required. This adjustment could be in either direction and should be made gradually until the pump beeps and the display changes to ‘C7’.
7. Apply 70 mmHg to the tubing added earlier and press the Single Leg button ensuring the pump beeps and the display changes to show ‘AS’. Again, wait for approximatley 5 seconds to see if the display changes to ‘CO’; if so, proceed to the next step. If, however, after the 5 second period the display still shows ‘AS‘, a small adjustment to the GAIN trimmer potentiometer is required. Again, this adjustment could be in either direction and should be made gradually until the pump beeps and the display changes to show ‘CO’.
8. With the pump displaying ‘CO‘, remove the air source from the tubing and ensure that the transducer tubing is open to atmosphere. Press the Single Leg button ensuring the pump beeps and display changes to ‘AO’. Again, wait for approximately 5 seconds to see if the display changes to ‘C7’; if so, proceed to the next step. If, however, after the 5 second period the display still shows ‘AO’, a further small adjustment to the ZERO trimmer potentiometer is required. Again, this adjustment could be in either direction and should be made gradually until the pump beeps and the display changes to show ‘C7’ once again.

9. With the pump displaying ‘C7’, reapply 70 mmHg to the tubing and press the Single Leg button, ensuring that the pump beeps and the display changes to ‘CC’.

10. Press the Single Leg button ensuring the display shows 70 ± 2 mmHg. Switch the pump off and disconnect from the power supply. Reconnect the transducer tubing securely and replace the top cover prior to switching the pump on again. Check the accuracy using the Calibration Check method described earlier.

4.5 Component Part Replacement

It is recommended that the following parts are replaced at each Preventive Maintenance period.

4.5.1 Dismantling the Pump Unit

Before dismantling the pump unit ensure it has been isolated from the power supply by removing the power cable from the wall outlet.

To remove the case lid, place the unit upside down on a flat, clean surface. Remove the rubber feet and unscrew the four self tapping screws.

Holding the unit in both hands, turn it onto its base and carefully remove the lid and place to one side.

4.5.2 Replacing the Compressor Assembly Components

Unscrew and remove the four M4 countersunk screws. Remove the lid and gasket and place to one side.

Note: if any changes are made to the compressor, it is essential that the flow rate is checked to ensure that the compressor is still within specifications.

4.5.2.1 Silencer Bag Assembly

Disconnect the silencer bag outlet tubes from the four way connector. Disconnect silencer bag inlet tubes from valve body assemblies.

Replacement is reverse of above procedure.

4.5.2.2 Bellows/Armature Blade Assemblies

Using long nosed pliers, extract armature blade from pivot point. Unclip bellow from valve body assembly.

Replacement is reverse of above procedure.

4.5.2.3 Compressor Valve Body Assembly

Unscrew and remove securing nuts on side of compressor casing. Remove valve body from compressor body.

Replacement is reverse of above procedure.

Note that the compressor can be replaced as a complete assembly if required. Disconnect the silencer bag outlet tubes from the four-way connector. Disconnect the compressor electrical leads from the terminal block main PCB.

4.6 General Checks

Check in the pump:

a) Base is free from any form of debris

b) Filter sponge position

c) Compressor seating position

d) Electrical connections are secure and completely insulated

e) Pressure control knob is tight

f) Tubes are fully pushed on and are free from kinks

g) Tubes and electrical insulation are not damaged

h) Power switch illuminates

i) Wiring is tidy

j) Outlet tubes and connectors are secure and attached correctly

4.7 Electrical Safety Checks

After carrying out any major repair work or after servicing the equipment, the following test procedures should be carried out.

4.7.1 Ground continuity test

If applicable, check the integrity of the bond between the ground pin on the cord plug and grounded dead metal parts in the pump.

The bond resistance should be not more than 0.2 ohms.

4.7.2 Leakage current test

Measure the risk currents in accordance with the AAMI American National Standard “Safe Current Limits for Electromedical Apparatus” or as specified in UL 544.

5 SERVICING THE PUMP

5.1 Replacing the Main Printed Circuit Board

1. Remove the two screws located towards the rear of the PCB.
2. Unclip the three electric connectors located at the rear left hand side of the board.
3. Remove the PCB by sliding it backwards.
4. Disconnect the buzzer electrical connection located at the right hand side of the PCB. (CON 1)
5. Disconnect the pressure sensing tubing.

Replacement is reverse of above procedure.

NB. Ensure the pressure sensing tubing and buzzer connector are reattached.

5.2 Replacing the Motor/Gear Box Assembly

This is a sealed unit which cannot be repaired and must be replaced if faulty.

1. Remove the main PCB as previously described.
2. Unscrew the 2 nylon pillars.
3. Disconnect all tubing attached to the assembly.
4. Cut the small cable securing tie wrap.
5. Disconnect electrical connections from the terminal block.

Replacement is reverse of above procedure.

When reconnecting tubes to the assembly, ensure there are no kinks and the tubes are pushed fully onto their mounts.

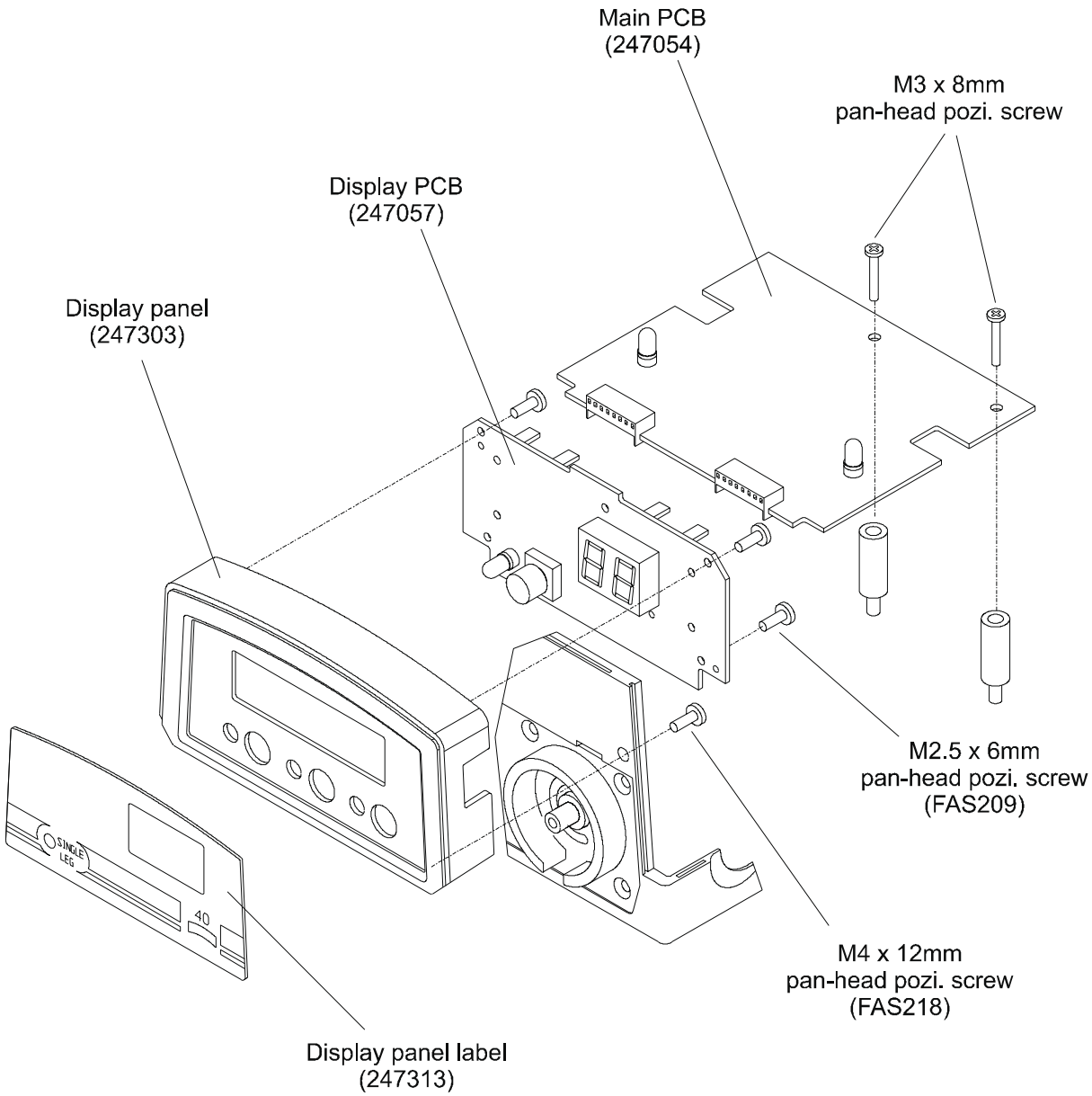
NB. When replacing the motor/gear box assembly, it is advisable to replace the rotor/stator assembly.

5.3 Replacement of Front Panel Assembly

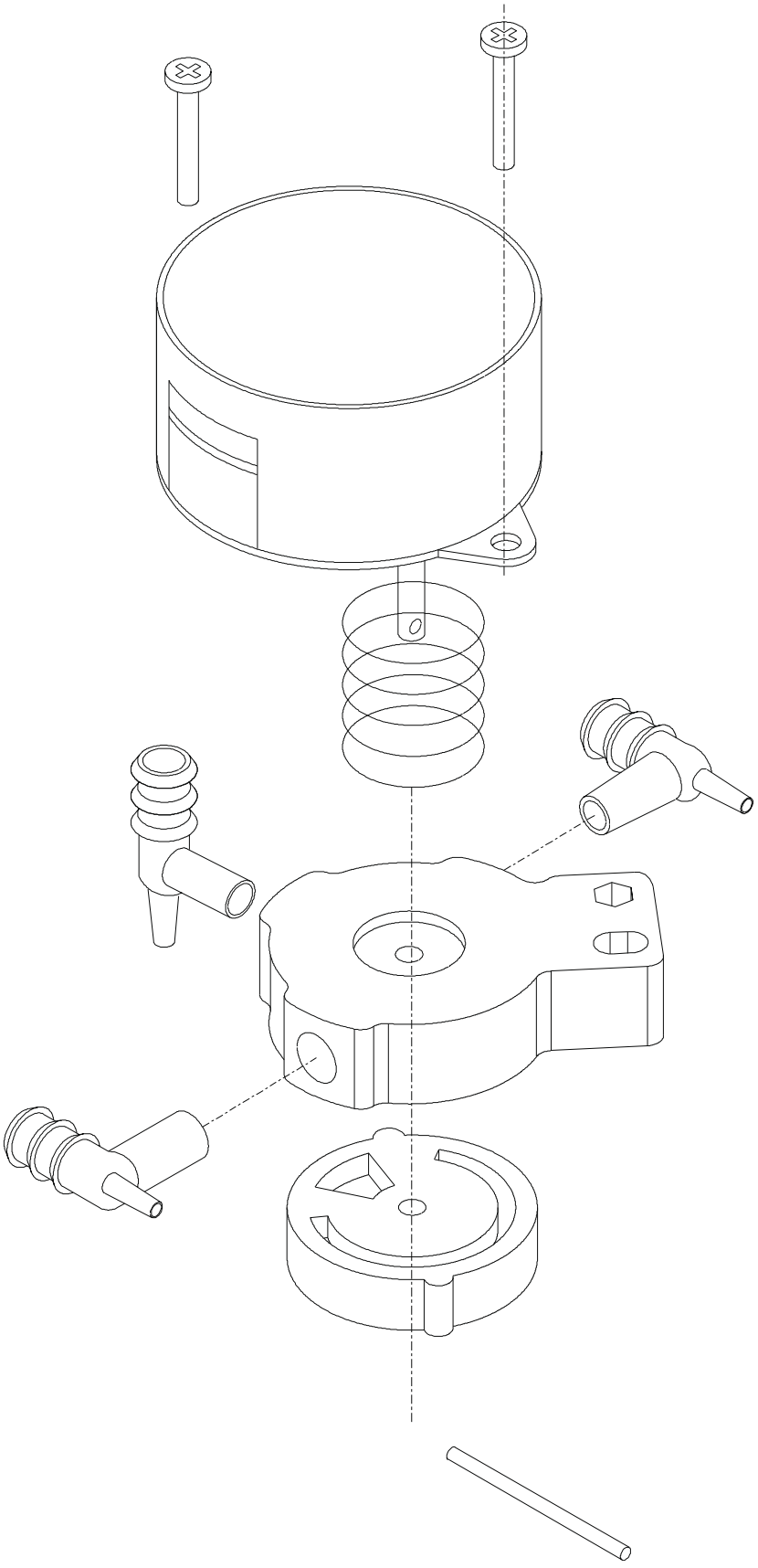
Remove the two securing screws and lift away.

Replacement is reverse of above procedure.

5.4 Replacing Main PCB or Front Display Panel



5.5 Replacing the Motor Gearbox Assembly (247071)



5.6 Replacing Display PCB

Having removed the two securing screws of the front panel assembly as described earlier, the Display PCB is now visible. Simply remove the six screws and lift out.

Replacement is reverse of above procedure.

5.7 Replacing the Electrical Supply On/Off Switch

Disconnect the electrical connections, squeeze together the retaining flanges located at the top and bottom of the switch body and push the switch through the front panel.

To replace the switch, push in from the front ensuring the switch retaining flanges snap into position.

Reconnect the electrical connections as per the wiring diagram.

5.8 Replacing the Pressure Control Knob

Rotate the pressure control knob to the 'maximum' position which is the far right of the dial. The securing screw is now visible from the bottom access position. Unscrew and remove.

When replacing the knob, press down hard to compress the friction spring.

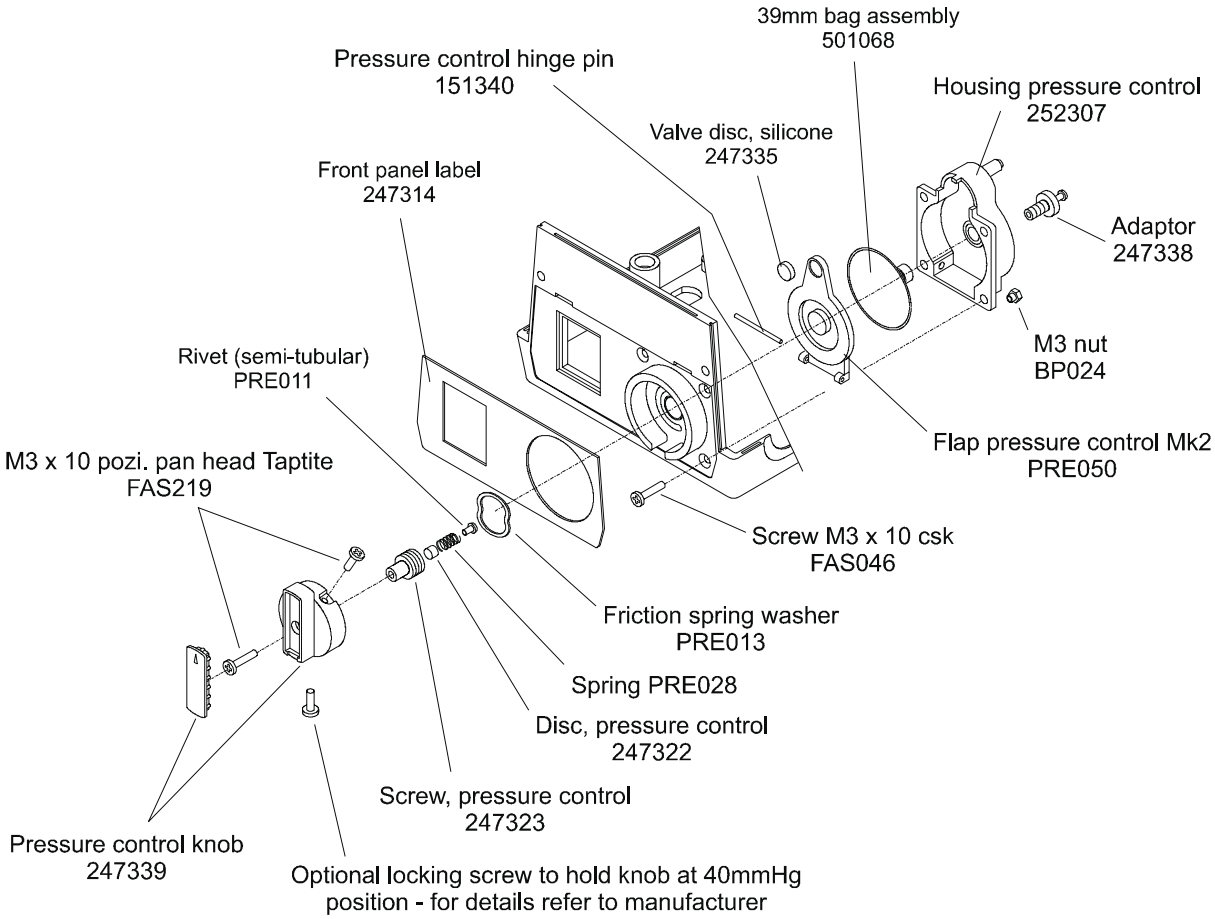
Note: Once the pressure control knob has been replaced, it is essential that the pressure range settings Max, Min and at the 40 mmHg are point are checked. If the pressures are too low, turn the adjusting screw in the knob clockwise. If pressures are too high, turn the screw counter clockwise.

5.9 Locking Knob Option (Part 247087)

A non-rotating version of the control knob is available from our Service Department.

Attachment is the same as the existing knob, but with an additional screw to lock the knob permanently in the 40 mmHg position. The output pressure can be calibrated using the pressure adjust screw.

5.10 Pressure Control Assembly



5.11 Replacing the Pressure Control Assembly

1. Carefully peel the face label from the front panel and place to one side.
2. Unscrew and remove the four countersunk securing bolts and nuts.
3. Disconnect all tubing attached to the assembly.
4. Replacement is reverse of the above procedure.
5. Ensure that the pressure control spring and rivet are in position before securing pressure control to front panel.
6. Reconnect tubing to the pressure control, ensuring all tubes are pushed fully onto their mounts.
7. Re-apply the existing label or apply a new label as appropriate.

5.12 Replacing the Connectors

Disconnect all tubing from the relevant connectors.

Remove the connector housing.

Replacement is reverse of the above procedure.

5.13 Replacing the Electrical Cord

1. Remove the power supply leads from the 3-way terminal block.
2. Remove the control PCB.
3. Unscrew the left hand side nylon pillar, attached to the motor gearbox assembly.
4. Remove the earth wire.
5. Remove from “strain relief bush.”

Replacement is reverse of the above procedure.

5.14 Buzzer Replacement

Disconnect connector CON1. Cut wires from existing buzzer mounted on base.

Fit replacement buzzer onto a clear base area close to the front of the pump ensuring that the lead is able to reach and fit onto CON1.

Use Cyanoacrylate 495 adhesive to bond the sounder's copper side to the plastic case.

Ensure the sounder is firmly attached by applying pressure for 10 seconds.

Note: Sounder clarity and volume are dependant on the quality of this bonding so ensure sounder output is checked by forcing the pump into a fault condition in order to check sounder output.

5.15 Hang Strap Assembly

Place the unit upside down on a flat, clean surface. Unscrew and remove two retaining screws from the hang strap plates anchoring the assembly to the base of the pump unit. Lift the assembly away from the unit and replace it.

6 TECHNICAL DATA

Pump Model Number	AC550
Size	3.5 x 10.5 x 4.5 inches
Weight	5.5lbs
Pressure Range	30 - 60 mmHg ± 5 mmHg
Cycle Time	Inflation 12 seconds (approx.) Deflation 48 seconds (approx.)
Indicators	2-digit 7-segment red LED that indicates: -garment pressure in 5 mmHg steps -fault conditions (HI, Lo, F) Single garment amber LED
	Power on - green illuminated switch and green LED on top panel Fault - red LED on top panel
Rated Voltage	120V ± 10%
Rated Frequency	60Hz
Rated Input Power	20 Watts
Fuses	F500mA
Tested To	UL544 - double insulation, external metal grounded
	IEC 601-1

Compressor Assembly	247072
Compressor Components	
- Silencer Bag Assembly	BP069
- Bellows Assembly Left	BP215
- Bellows Assembly Right	BP214
- Valve Body	BP554
- Coil Assembly (5k turns 120V)	BP447
- “E” Stack	BP028
- Armature Pivot	BP043
- Compressor Casing	BP181
- Compressor Lid	BP182
- Compressor Gasket	BP032
- Inlet Filter	BP044
- Filter Inlet	501309
- Sponge Strip	BP190
Main Printed Circuit Board	247054
Display Printed Circuit Board	247057
Motor/Gear Box Assembly	247071
On/Off Switch	BP006
Connector Assembly	247074
Electrical Cord Assembly	BP300
Strain Relief Bush	CAS029
Buzzer Assembly	252108
Hang Strap Assembly	247075
Hang Strap Plate	BP014
Front Panel Label	247314
Top Cover Label	247312
Display Panel Label	247313
Case Feet	BP205
Cable Tie	BP196
Fuse Holder	BP202
Top Enclosure	247337

Base	247311
Handle	247305
3-way Terminal Block	BP514
Display Panel	247303
Pressure Control Components	
- Pressure Control Knob	247339
- Flowtron Spring	PRE028
2-way Mate-N-Lock Cover	151357
Socket (Mate-N-Lock)	151358
Pressure Control Knob - locked version	247087